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or r -gon ; so that the present memoir may be considered as a completion, or rather an extension and completion, of the investigations in his former memoir. The number of distinctions to be made in the problem of the present memoir is very great ; thus, a partition of the polygon may be either reversible or irreversible ; and if reversible, then the axis of reversion may be either agonal, monogonal, or diagonal, that is, it may pass through no angle, one angle only, or two angles of the polygon ; and in the last case it may be either drawn or undrawn. Again, there may be a single axis or a greater number of axes of reversion : in the case of m such axes, the partition is said to be m -ly reversible ; and in like manner an irreversible partition may consist of a single irreversible sequence of configurations, or it may contain such sequence m times repeated, it is then said to be m -ly irreversible. In consequence of this multiplicity of distinctions, the author's final results are necessarily very complicated, and cannot be exhibited in an abstract ; they appear, however, to contain a complete solution of the problem, *i. e.* to afford the means of finding, without anything tentative, the number of the k -partitions of an r -gon when k and r are given numbers.

December 18, 1856.

The LORD WROTTESLEY, President, in the Chair.

The following communications were read :—

- I. “On the Scelidotherium (*Scelidotherium leptcephalum*, Owen), a large extinct Terrestrial Sloth.” By Professor R. OWEN, F.R.S. Received October 30, 1856.

(Abstract.)

The extinct species of large terrestrial Sloth, indicated by the above name, was first made known by portions of its fossil skeleton having been discovered by Charles Darwin, Esq., F.R.S., at Punta Alta, Northern Patagonia. These portions were described by the

author in the Appendix to the 'Natural History of the Voyage of H.M.S. Beagle.'

The subsequent acquisition by the British Museum of the collection of Fossil Mammalia brought from Buenos Ayres by M. Bravard, has given further evidence of the generic distinction of the Scelidotherium, and has supplied important characters of the osseous system, and especially of the skull, which the fragments from the hard consolidated gravel of Punta Alta did not afford.

The best portion of the cranium from that locality wanted the facial part anterior to the orbit, and the greater part of the upper walls; sufficient however remained to indicate the peculiar character of its slender proportions, and hence Professor Owen has been led to select the name *leptocephalum* for the species, which is undoubtedly new.

The aptness of the epithet 'slender-headed' is proved by the author's researches to be greater than could have been surmised from the original fossil; for the entire skull, now in the British Museum, exhibits a curious and very peculiar prolongation of the upper and lower jaws, and a slenderness of the parts produced anterior to the dental series, unique in the leaf-eating section of the order *Bruta*, and offering a very interesting approximation to the peculiar proportions of the skull in the Ant-eaters.

The original fossils from Patagonia indicated that they belonged to an individual of immature age: the difference of size between them and the corresponding parts in the British Museum, depends on the latter having belonged to full-grown individuals: the slight difference in the shape of the anterior molars seems in like manner to be due to such an amount of change as might take place in the progress of growth of a tooth with a constantly renewable pulp. Professor Owen finds at least no good grounds for inferring a specific distinction between the mature if not old Scelidotherium from Buenos Ayres, and the younger specimen from Patagonia.

The author then proceeds to give a detailed anatomical account of the fossil bones in the British Museum, instituting a comparison between them and the bones of other large extinct animals, especially those of the Edentate order.

The Scelidotherium was a quadruped of from 8 to 10 feet in length, but not more than 4 feet high, and nearly as broad at the haunches;

the thigh-bones being extraordinarily broad in proportion to their length. The trunk gradually tapered forwards to the long and slender head. The fore-limbs had complete clavicles, and the rotatory movements of the fore-arm. All the limbs were provided with long and strong claws. The animal had a long and muscular tongue, and it is probable that its food might have been of a more mixed nature than in the Megatherium. But it was more essentially related to the Sloths than to the Ant-eaters.

In conclusion the author remarks, that as our knowledge of the great Megatherioid animals increases, the definition of their distinctive characters demands more extended comparison of particulars. Hence in each successive attempt at a restoration of these truly remarkable extinct South American quadrupeds, there results a description of details which might seem prolix and uncalled for, but which are necessary for the proper development of the task of reproducing a specimen of an extinct species.

Professor Owen adds, that he is indebted to an allotment from the Government Grant, placed at the disposal of the Royal Society for scientific purposes, for the means of laying before the Society large and admirably executed drawings of the fossil bones described in his paper.

II. "On the Evidence of the existence of the Decennial Inequality in the Solar-diurnal Variations, and its non-existence in the Lunar-diurnal Variation of the Magnetic Declination at Hobartton." By Major-General SABINE, R.A., D.C.L., Treas. and V.P.R.S. Received Nov. 17, 1856.

(Abstract.)

In a communication made to the Royal Society in the last Session, "On the Lunar-diurnal Magnetic Variation at Toronto," the author had stated that he could discover no trace of the lunar influence of the decennial inequality which constitutes so marked a feature in the solar magnetic variations. He has since read, in a memoir communicated to the Imperial Academy of Sciences at Vienna, entitled "On the Influence of the Moon on the horizontal component of the Mag-